



# FrontISTR Version 5.8 Release Notes

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## Release Date

2025/11/07

## Changes

### New Features

#### E-1. Implementation of element activation/deactivation feature

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An “element activation/deactivation” feature has been implemented to suppress calculations for specified element groups. The activation/deactivation of element groups can be controlled via the `!ELEMENT_ACTIVATION` keyword in the control file. Visualization output of deactivated elements is also supported.

(Issue [#657](#), solver [!473](#), document [!9](#))

### Specification Changes

#### M-1. Restriction on CLOAD specification by node groups when mesh is refined

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When mesh is refined, CLOAD specification via node groups becomes difficult to distinguish from node groups for boundary conditions. The behavior has been changed to stop with an error during use.

(Issue [#272](#), solver [!512](#))

## M-2. Refactoring of external load processing

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The external load processing (fstr\_ass\_load.f90) has been divided into dedicated subroutines for each load type to improve readability and maintainability. Processing for concentrated nodal forces, distributed loads, user-defined loads, thermal loads, and others has been organized into individual functions, with common processing extracted as helper functions.

(Issue [#683](#), solver [!484](#))

## M-3. Review of default values for auto-increment parameters and contact search parameters

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Default values for auto-increment control parameters and contact search parameters in nonlinear analysis have been reviewed.

(Issue [#710](#), solver [!511](#))

## M-4. Change of component names for principal stress and principal strain in VTK output

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When reading pvtu files in ParaView, the component display for principal stress and principal strain has been changed from the default "X, Y, Z" to "1st, 2nd, 3rd".

(solver [!505](#))

## M-5. Fix dependency relationships in Makefile.am

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Dependencies between Fortran source files in Makefile.am (.dependf90) have been corrected.

(solver [!507](#))

## M-6. Fix of compiler warnings and dependent library linking during build

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Compiler warnings such as buffer overflow that occurred in GitLab CI have been resolved. Additionally, duplicate dependent library specifications in CMake linking have been organized.

(Issue [#713](#), solver [!510](#))

## Bug Fixes

### B-1. Fix of thickness not applied in stress update for 2D elements

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A bug in subroutine UPDATE\_C2 in static\_LIB\_2d.f90 where the internal force vector calculation was not multiplied by thickness (THICK), resulting in unit inconsistency, has been fixed.

(Issue [#276](#), solver [!513](#))

## **B-2. Fix of NaN errors due to variable initialization omission in contact and embed**

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Comprehensive initialization of state variables (distance, lpos, gpos, direction, multiplier, tangentForce, etc.) in contact and embed has been implemented to eliminate NaN errors caused by uninitialized variables. Additionally, the element center coordinate acquisition function (getElementCenter) has been adapted to support 3D elements such as tetrahedra, prisms, and hexahedra. This error was not apparent in environments where the compiler zeros out uninitialized variables, but would cause errors in other environments.

(Issue [#714](#), solver [!511](#))

## **B-3. Fix of missing arguments in load assembly during contact analysis in implicit dynamic analysis**

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A bug where the iteration count (iter) argument was not passed to the dynamic\_mat\_ass\_load call during contact analysis in implicit dynamic analysis (dynamic\_nimplicit) has been fixed.

(solver [!515](#))

## **B-4. Fix of contact information not written to restart file in explicit dynamic analysis**

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A bug where contact information was not included in restart file writing during explicit dynamic analysis (dynamic\_nexplicit) has been fixed.

(solver [!508](#))

## **Acknowledgments**

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- Otasam-ihcada: M-4